IN THE CLAIMS:

Claims 7, 8 and 16 through 63 were previously cancelled. Claims 1, 14, 15, 65, and 66 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

1. (Currently amended) A method for manufacturing an interconnect structure consisting essentially of:

forming a recess within a dielectric material situated on a semiconductor substrate, the recess extending below a top surface of the dielectric material;

forming a diffusion barrier layer substantially conformally on the top surface of the dielectric material and over an interior surface of the recess;

forming a seed layer on the diffusion barrier layer over the top surface of the dielectric material and within the recess, wherein ~~the material of~~ the seed layer comprises tungsten and wherein ~~the material of~~ the diffusion barrier layer is a different ~~from the~~ material ~~of~~ than the seed layer;

forming an electrically conductive layer on the seed layer over the top surface of the dielectric material and substantially within the recess such that voids are present within the recess, the material of the diffusion barrier layer having a melting point greater than a melting point of a material of the electrically conductive layer, the material of the seed layer having a melting point greater than or equal to a melting point of the material of the electrically conductive layer;

forming an energy absorbing layer on the electrically conductive layer, a material of the energy absorbing layer having a greater thermal absorption capacity than the thermal absorption capacity of the material of the electrically conductive layer;

applying energy and pressure to the energy absorbing layer sufficient to cause the electrically conductive layer to fill the voids within the recess; and

removing portions of the energy absorbing layer and the electrically conductive layer that are situated above the top surface of the dielectric material.

2. (Previously presented) The method of claim 1, wherein forming a diffusion barrier layer comprises forming the diffusion barrier layer by chemical vapor deposition.

3. (Previously presented) The method of claim 1, wherein forming a diffusion barrier layer comprises forming the diffusion barrier layer from a material selected from the group consisting of ceramics, metallics, and intermetallics.

4. (Previously presented) The method of claim 1, wherein forming a diffusion barrier layer comprises forming the diffusion barrier layer from a material selected from the group consisting of aluminum nitride, tungsten nitride, titanium nitride, and tantalum nitride.

5. (Previously presented) The method of claim 1, further comprising, prior to forming a seed layer on the diffusion barrier layer, heating the diffusion barrier layer in an environment substantially containing a nitrogen gas.

6. (Previously presented) The method of claim 1, wherein forming a seed layer on the diffusion barrier layer comprises depositing the seed layer by chemical vapor deposition.

7. (Cancelled)

8. (Cancelled)

9. (Previously presented) The method of claim 1, wherein forming an electrically conductive layer comprises forming the electrically conductive layer from a material selected from the group consisting of aluminum and copper.

10. (Previously presented) The method of claim 1, wherein forming an energy absorbing layer comprises forming the energy absorbing layer from a material selected from the group consisting of titanium, titanium nitride, tungsten, tungsten nitride, silicon nitride, silicon dioxide, tantalum, tantalum nitride, and carbon.

11. (Previously presented) The method of claim 1, wherein applying energy to the energy absorbing layer comprises applying the energy to the energy absorbing layer utilizing a furnace.

12. (Previously presented) The method of claim 1, wherein removing portions of the energy absorbing layer and the electrically conductive layer comprises removing the portions of the energy absorbing layer and the electrically conductive layer by abrasive planarization.

13. (Previously presented) The method of claim 1, wherein removing portions of the energy absorbing layer and the electrically conductive layer comprises removing the portions of the energy absorbing layer and the electrically conductive layer by chemical mechanical planarization.

14. (Currently amended) The method of claim 1, further comprising forming the recess to have an aspect ratio greater than about four ~~(4) to one (1)~~ to one (4:1).

15. (Currently amended) The method of claim 1, further comprising forming the recess to comprise a ~~contact~~ hole situated below a trench, the ~~contact~~ hole terminating at an end thereof at the semiconductor substrate and terminating at an opposite end thereof at the trench, the trench extending from the opposite end of the ~~contact~~ hole to the top surface of the dielectric material, the trench extending parallel to ~~the~~ a plane of the semiconductor substrate.

16.-63. (Cancelled)

64. (Previously presented) The method of claim 1, wherein applying energy and pressure to the energy absorbing layer sufficient to cause the electrically conductive layer to fill the voids within the recess comprises applying sufficient energy and pressure to the energy absorbing layer to cause the electrically conductive layer to become flowable.

65. (Currently amended) A method for manufacturing an interconnect structure consisting essentially of:

forming a recess within a dielectric material situated on a semiconductor substrate, the recess extending below a top surface of the dielectric material;

forming a diffusion barrier layer substantially conformally on the top surface of the dielectric material and over an interior surface of the recess;

forming a seed layer on the diffusion barrier layer over the top surface of the dielectric material and within the recess, the diffusion barrier layer comprising a different material to that of a material of the seed layer, wherein the material of the seed layer is aluminum, titanium nitride, titanium, or titanium aluminide;

forming an electrically conductive layer on the seed layer and substantially within the recess such that voids are present within the recess, the material of the diffusion barrier layer having a melting point greater than a melting point of a material of the electrically conductive layer, the material of the seed layer having a melting point greater than or equal to a melting point of the material of the electrically conductive layer;

forming an energy absorbing layer on the electrically conductive layer, ~~the~~ a material of the energy absorbing layer having a greater thermal absorption capacity than ~~the~~ a thermal absorption capacity of the material of the electrically conductive layer;

applying energy to the energy absorbing layer sufficient to cause the electrically conductive layer to fill the voids within the recess; and

removing portions of the energy absorbing layer and the electrically conductive layer that are situated above the top surface of the dielectric material.

66. (Currently amended) A method for manufacturing an interconnect structure consisting essentially of:

forming a recess within a dielectric material situated on a semiconductor substrate, the recess extending below a top surface of the dielectric material;

forming a diffusion barrier layer substantially conformally on the top surface of the dielectric material and over an interior surface of the recess;

forming a seed layer on the diffusion barrier layer over the top surface of the dielectric material and within the recess, the diffusion barrier layer comprising a material having a melting point greater than that of a material of the seed layer, wherein the material comprising the seed layer is aluminum, titanium nitride, titanium, or titanium aluminide;

forming an electrically conductive layer on the seed layer and substantially within the recess such that voids are present within the recess, the material of the diffusion barrier layer having a melting point greater than a melting point of a material of the electrically conductive layer, the material of the seed layer having a melting point greater than or equal to a melting point of the material of the electrically conductive layer;

forming an energy absorbing layer on the electrically conductive layer, the material of the energy absorbing layer having a greater thermal absorption capacity than ~~the~~ a thermal absorption capacity of the material of the electrically conductive layer;

applying energy and pressure to the energy absorbing layer sufficient to cause the electrically conductive layer to fill the voids within the recess; and

removing portions of the energy absorbing layer and the electrically conductive layer that are situated above the top surface of the dielectric material.